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Electron spin resonance studies of the stabilization mechanism of cellulose nitrates

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Abstract

Although stabilization of polymer composites (specifically, cellulose nitrates (CN)) has been studied since fairly long time ago, no scrutiny of the nature of radical reactions underlying this process was undertaken. At the same time, as has been shown previously, ESR spectroscopy proved to be an efficient method for studying radical reactions taking place in thermal decomposition of CN. Therefore of interest is to employ the ESR technique in studies of the effect of diphenylamine (DPA), the most frequently used chemical stabilizer of cellulose nitrates, on these reactions and thereby to elucidate the appropriate stabilization mechanism.